



**NOAA**  
**FISHERIES**

Alaska Fisheries Science Center  
Resource Assessment and Conservation Engineering Division

Groundfish Assessment Program

# National Ocean Mapping, Exploration, and Characterization (NOMECA) NOAA Fisheries – Alaska Response

AUGUST 2020

## AFSC Processed Report

This document should be cited as follows:

McConnaughey, R. A., S. S. Intelmann, J. L. Pirtle, S. G. Lewis, and K. R. Mabry. 2020. National Ocean Mapping, Exploration and Characterization (NOMECA) NOAA Fisheries – Alaska Response. AFSC Processed Rep. 2020-05, 35 p. Alaska Fish. Sci. Cent., NOAA, Natl. Mar. Fish. Serv., 7600 Sand Point Way NE, Seattle WA 98115.

This document is available online at: <https://repository.library.noaa.gov/>

Reference in this document to trade names does not imply endorsement by the National Marine Fisheries Service, NOAA.

National Ocean Mapping, Exploration and Characterization (NOMECE)

NOAA Fisheries – Alaska Response

R. A. McConnaughey<sup>1</sup>, S. S. Intelmann<sup>1</sup>, J. L. Pirtle<sup>2</sup>, S. G. Lewis<sup>2</sup>, and K. R. Mabry<sup>2</sup>

<sup>1</sup> Alaska Fisheries Science Center

7600 Sand Point Way NE

Seattle, WA 98115

<sup>2</sup>Alaska Regional Office

709 W. 9th St.

Juneau, AK 99802-1668

August 2020



## Contents

Background .....	1
The NOAA Fisheries – Alaska Response .....	2
Project Selection .....	2
Prioritization of Projects .....	2
Allocation of Survey Effort .....	3
Final Review by Leadership .....	4
National Reporting .....	4
Next Steps .....	4
Appendices.....	19



## Background

The White House convened an ocean science and technology summit on 14 November 2019<sup>1</sup>, which was followed by a Presidential Memorandum on Ocean Mapping of the United States Exclusive Economic Zone (EEZ) and the Shoreline and Nearshore of Alaska on 19 November 2019<sup>2</sup>. The Presidential Memorandum orders development of a national strategy for mapping, exploring, and characterizing the U.S. EEZ to advance the economic, security, and environmental interests of the United States. The shoreline and nearshore maps for Alaska and the Alaska Arctic were identified as particularly data deficient. NOAA was instructed to coordinate development of a prioritized national mapping plan based on input from federal agencies and stakeholders. For this plan, mapping is defined broadly to include bathymetry, habitat, seafloor, archaeological, biological, chemical, and other oceanic attributes, according to guidance from RDML Timothy Gallaudet, Assistant Secretary of Commerce for Oceans and Atmosphere /Deputy NOAA Administrator.<sup>3</sup>

The NOAA Integrated Ocean and Coastal Mapping program in the National Ocean Service (IOCM)<sup>4</sup> is responsible for planning and operational aspects of compiling the national responses to the Presidential Memorandum. IOCM participation in the Interagency Working Group on Ocean and Coastal Mapping routinely facilitates the coordination of ocean and coastal mapping activities across the federal, state, industry, academic, and non-governmental sectors. Within NOAA, the NOAA IOCM Coordination Team and IOCM Program work together to meet NOAA's mapping needs, modify projects to meet more than one objective, and improve NOAA's ability to use data for multiple applications (i.e., simultaneously collected bathymetry for charting and seabed characteristics for habitat mapping). The IOCM and its Coordination Team have developed the spatial framework, survey tools, and metadata specifications for the National Ocean Mapping, Exploration, and Characterization (NOMECE) response.

The Alaska Fisheries Science Center (AFSC) and the Alaska Regional Office (AKRO) were tasked to identify National Marine Fisheries Service (NOAA Fisheries) priorities for ocean mapping in the Alaska region. The overall process to prioritize mapping activities in the Alaska EEZ consisted of a widely distributed standardized survey to obtain technical recommendations, strategic prioritizations based on the AFSC Science Plan and other mission-related considerations, and transferring the prioritized geospatial information into an online portal managed by IOCM. National results will be analyzed using clustering and other spatial statistical techniques to identify significant relationships between priorities, issues, and ranking criteria. NOAA Fisheries can use this information to 1) better understand how priorities align with the needs of other NOAA and Federal offices, 2) allow for more efficient

---

<sup>1</sup> URL: <https://www.whitehouse.gov/wp-content/uploads/2019/12/Ocean-ST-Summit-Readout-Final.pdf>

<sup>2</sup> URL: <https://www.whitehouse.gov/presidential-actions/memorandum-ocean-mapping-united-states-exclusive-economic-zone-shoreline-nearshore-alaska/>

<sup>3</sup> November 10, 2019 e-mail, Subject: ACTION: due November 14- NOCC follow up on NOAA IOCM Prioritization Exercise

<sup>4</sup> URL: <https://iocm.noaa.gov/>

coordination of projects and funding, and 3) enable partners to leverage assets and resources to fill the most pressing information gaps ([Fig. 1](#)).

## The NOAA Fisheries – Alaska Response

### Project Selection

A survey package of data needs was developed to identify and prioritize marine waters of Alaska to be mapped with a variety of modern technologies. The Alaska Prioritization Survey (Survey) was structured to gather highly granular data that could be reorganized and compiled to meet a variety of final needs. The Survey was composed of two parts:

1. A spreadsheet for entering the respondent's name, the recommended area, a brief rationale for the recommendation, and other metadata related to the national survey ([Appendices](#)).
2. A Geographic Information System (GIS) shape file to represent the survey area where ocean mapping data are needed. Specific instructions were provided to ensure geospatial conformity.

Recommendations were obtained from a cross-section of research disciplines at the AFSC and AKRO. A total of 31 project locations was submitted by scientists from four AFSC Divisions (Auke Bay Laboratories, ABL; Marine Mammal Laboratory, MML; Resource Assessment and Conservation Engineering, RACE; and Resource Ecology and Fishery Management, REFM) and the AKRO. There were 3 duplicate submissions resulting in a total of 28 unique projects ([Table 1](#); [Fig. 2](#)). Inspection in a GIS revealed overlapping spatial extents for several groups of projects. In each case, groups of overlapping projects were aggregated into composite areas by dissolving the external boundaries.

### Prioritization of Projects

AFSC and AKRO leadership were briefed on the project selection process and the recommendations for mapping. Several guiding principles were adopted for prioritizing the projects. The prioritization level determines the urgency for conducting mapping operations where, according to national standards: high-priority (H) projects have a mapping need in 1-2 years, medium-priority (M) projects have a mapping need in 3-5 years, low-priority (L) projects have a mapping need in 6-10 years, and other areas are not prioritized (N) but would be mapped within the 10-year NOMECE timeline. Twenty-two of the 31 Alaska projects were designated as H and 9 projects were designated as M by the scientists participating in the Survey ([Table 1](#)). None of the Alaska mapping projects had a recommended timeline exceeding 5 years.

The combined AFSC-AKRO guidance advised the following:

1. Collaboration between the AFSC and AKRO.
2. Use priorities assigned by scientists.
3. Make progress throughout the entire US EEZ in Alaska (i.e., apportion effort).
4. Create useful data products after each NOMECE time period (i.e., judicious subsampling).
5. Equal allocation of mapping effort to projects within a priority group.

Final priorities for the combined list of AFSC-AKRO mapping projects were assigned by the scientists making the original recommendations. Both priorities were tallied whenever both offices recommended the same project location.

A regional framework was implemented to ensure progress for all mapping projects during each of the NOMECE time periods. Individual and composite projects were placed in six standard management regions and mapping effort was allocated based on their proportional areas (Fig. 3). This resulted in larger regions receiving a larger allocation of the total Alaska effort, but smaller regions were not neglected. As a result of this allocation framework, a few projects that spanned region boundaries were split and allocated separately, according to the original priority assignments and the allocation scheme for the occupied regions.

#### Allocation of Survey Effort

IOCM established a 10 × 10 km (100 km<sup>2</sup>) grid of the U.S. EEZ and these grid cells were the basis for allocating survey effort in the EEZ. National guidelines limited the total mapping effort that could be allocated to the different priority levels.

Priority	Timeline (years)	% Total effort
High (H)	1-2	10
Medium (M)	3-5	25
Low (L)	6-10	50
None (N)	< 10	15

The Alaska EEZ was composed of 41,630 grid cells representing 4,163,000 km<sup>2</sup> of marine seabed, extending up to 20 km inland (Fig. 4). After accounting for overlapping locations and regional boundaries, the net result was 16 distinct areas for the Alaska portion of the national NOMECE effort, including 4 composite areas representing 17 of the original projects and 4 of the original 28 that spanned two management regions (Table 2). Each of these projects was allocated a fixed number of grid cells based on its management region and priority-level shares, with a due accounting for multiple priorities when a project was recommended multiple times or when projects were merged into composite projects. Mapping effort (cells) were equally apportioned within a priority class (i.e., 4 H-priority projects in a region each received 25% of the total H-priority cells available for that region). Accordingly, cells were allocated at the priority assigned to a project until the available cells at that level

were exhausted, at which point the process was repeated for this and the other projects assigned to the next lower priority level (residual need for higher-priority projects took precedence), and so on until coverage requirements were met and/or the regional quota was exhausted. The total number of cells allocated to the six regions represented only 89.2% of the total cells composing the U.S. EEZ off Alaska, most likely related to the alignment of the national grid. The leftover cells were preferentially allocated to projects/regions with overall low sampling rates or other perceived deficiencies, including operational considerations.

The strategy for placing allocated cells on the national EEZ grid was intended to produce useful data products at the end of each NOMECE time period. That is, grid cells were judiciously allocated to the original 28 projects to support useful interpolations of survey data in each project area at the end of the first (H) sampling interval, if full spatial coverage was not possible. Allocations during subsequent time periods (M, L, N) were purposely interleaved to provide improved interpolations over the course of the NOMECE effort. Operational considerations dictated that cells at a location should be configured linearly (i.e., as tracklines) whenever possible, as opposed to randomly placed. Tracklines were designated to span the full area to be mapped with line-spacing determined by the available number of cells ([Fig. 5](#)).

Final Review by Leadership

Leadership at AFSC and the AKRO approved all projects recommended for mapping and the designated priorities.

National Reporting

Areas to be mapped in the Alaska EEZ and their priorities were delivered to the IOCM portal for the national NOMECE effort. A total of 35,386 (85.0%) of the 100 km<sup>2</sup> grid cells were allocated at the maximum guideline levels for the H, M, and L priority classes. The remaining 6,244 cells retained the default priority N ([Fig. 6](#)).

Priority	# Grid cells
High (H)	4,163
Medium (M)	10,408
Low (L)	20,815
None (N)	6,244

Next Steps

1. Inputs from other NOAA Line Offices and other governmental bodies will be compiled and analyzed by IOCM and the IOCM Coordination Team.

2. Inputs will be solicited from NOAA partners and stakeholder groups, such as the North Pacific Fishery Management Council, the fishing industry, and the Alaska Native community at a later stage, as determined by IOCM.
3. IOCM and the IOCM Coordination Team will compile the national results and report by region on congruous priorities and collaborative opportunities.
4. Technical points of contact at the AFSC and AKRO will provide short follow-up briefings to leadership as the NOMECE effort continues.

Table 1. --Locations in the Alaska EEZ where ocean mapping data are needed. Office indicates whether the Alaska Fisheries Science Center (AFSC) or the Alaska Regional Office (AKRO) recommended the project location. Rationales for mapping and priorities were assigned by the scientist making the recommendations. Priorities correspond to different timelines for completion of the work; namely, high-priority locations have a mapping need in 1-2 years and medium-priority projects have a mapping need in 3-5 years. None of the recommended Alaska projects had a timeline exceeding 5 years.

<b>ID</b>	<b>Project Locations</b>	<b>Office</b>	<b>Rationale</b>	<b>Priority</b>
	Beaufort Sea			
1	Prudhoe Bay offshore	AFSC	Never charted.	H
	Chukchi Sea			
2	Kotzebue	AFSC	Never charted.	H
3	Kotzebue_2	AFSC	The MML has conducted studies on beluga, killer whale, and porpoise species in Bristol Bay and near Kotzebue and Yakutat since 2009. There are navigation safety concerns due to outdated or sparse bathymetric data in these shallow water areas of high sediment dynamics. Detailed bathymetry will be used to determine acoustic mooring placements. In addition, knowing the substrate type will allow the characterization of acoustic propagation as well as marine mammal detection distances.	M

ID	Project Locations	Office	Rationale	Priority
4	Chukchi Sea basin	AFSC	Commercially important groundfish are increasingly being found in the Chukchi and Beaufort Seas in the Arctic. The Arctic FMP currently prohibits fishing but more baseline data about the habitat and bathymetry are needed as this area opens up to vessel traffic and potentially fishing. Habitat and baseline bathymetry data are considered as foundational research information to fulfill NOAA's Arctic Vision and Strategy.	M
Northern Bering Sea				
5	NBS Research Area	AFSC	NBSRA is closed to trawling until potential ecosystem impacts are described and evaluated by the NPFMC. Baseline information is needed to design a trawl-impact study.	H
6	NBS shelf	AFSC, AKRO	<u>AFSC</u> : Vulnerable marine ecosystem, potential conflicts in the management of commercial groundfish habitat, subsistence and protected/endangered species. <u>AKRO</u> : Multibeam acoustic bathymetry/backscatter needed as baseline information to design a trawl-impact study. Needed for EFH mapping.	M, M
Eastern Bering Sea				
7	Bering Sea nearshore	AKRO	Bering Sea continental shelf inside of the RACE Groundfish Assessment Program survey areas is not well mapped with respect to bathymetry, sediment/substrate, and other environmental attributes. This information is needed to develop quality EFH maps for groundfish juvenile life stages in this area that is likely extensive nursery habitat (e.g., flatfish). Quality EFH information for habitat-related density, vital rates, and productivity is needed to link nursery habitat productivity to offshore populations in the groundfish fisheries.	H

ID	Project Locations	Office	Rationale	Priority
8	Bristol Bay	AKRO	Bristol Bay nearshore habitats are nurseries for commercially important groundfish and crabs. Comprehensive sediment/substrate, other environmental attributes, and juvenile fish data will establish nursery habitat linkages with offshore productivity in the EBS fisheries (EFH Level 4). These survey data are required to first develop maps of juvenile fish habitat-related density (EFH Level 2) and vital rates (EFH Level 3). This information is critical to understand impacts of, for example, mining on fish habitat and consequences to EBS fishery productivity.	H
9	Bristol Bay_2	AFSC	MML has conducted studies on beluga, killer whale, and porpoise species in Bristol Bay and near Kotzebue and Yakutat since 2009. There are navigation safety concerns due to outdated or sparse bathymetric data in these shallow water areas of high sediment dynamics. Detailed bathymetry will be used to determine acoustic mooring placements. In addition, knowing the substrate type will allow the characterization of acoustic propagation as well as marine mammal detection distances.	M
10	EBS shelf - west	AFSC	Complete trackline-acoustic survey of EBS bottom-trawl-survey stations (western half). Eastern half surveyed in 2016. Comprehensive data are needed for basin-scale EFH, survey-trawl efficiency, and other modeling applications.	H

ID	Project Locations	Office	Rationale	Priority
11	EBS slope	AFSC	<p>Many commercially important fish and invertebrate species occur and are harvested along the upper continental slope of the eastern Bering Sea. Little is known of the topography of high relief areas such as canyons and steep faces along the slope. Detailed bathymetry maps would be invaluable for bottom trawl surveys to determine trawlable and untrawlable grounds and a much greater understanding of fish and invertebrate habitats. Bathymetry would also be valuable for other stakeholders, such as the commercial fishery.</p>	H
12	Zhemchug Canyon	AFSC	Never charted.	H
	Gulf of Alaska			
13	Cook Inlet	AFSC	<p>Cook Inlet belugas continue to decline, despite being listed as endangered in 2008 and having a formal recovery plan. Since 2016, MML has been conducting boat-based operations to further assess body condition, abundance, and distribution. However, exposed mudflats, narrow channels and outdated bathymetric charts make navigation in upper Cook Inlet challenging and often dangerous to small-boat research options. In addition to aiding navigation in upper Cook Inlet, high-res depth data will help us understand how these animals are using their environment.</p>	H
14	Cook Bay	AFSC	<p>Pacific cod are commercially and ecologically important. Understanding their distribution and use of nearshore nursery habitats remains limited. The proposed work would fill in gaps of existing bathymetry, conducted in 2004 + 2017, at the site of an ongoing study (since 2006). Comprehensive data are needed for regional-scale EFH work on residency and connectivity of juvenile and adult Pacific cod.</p>	H

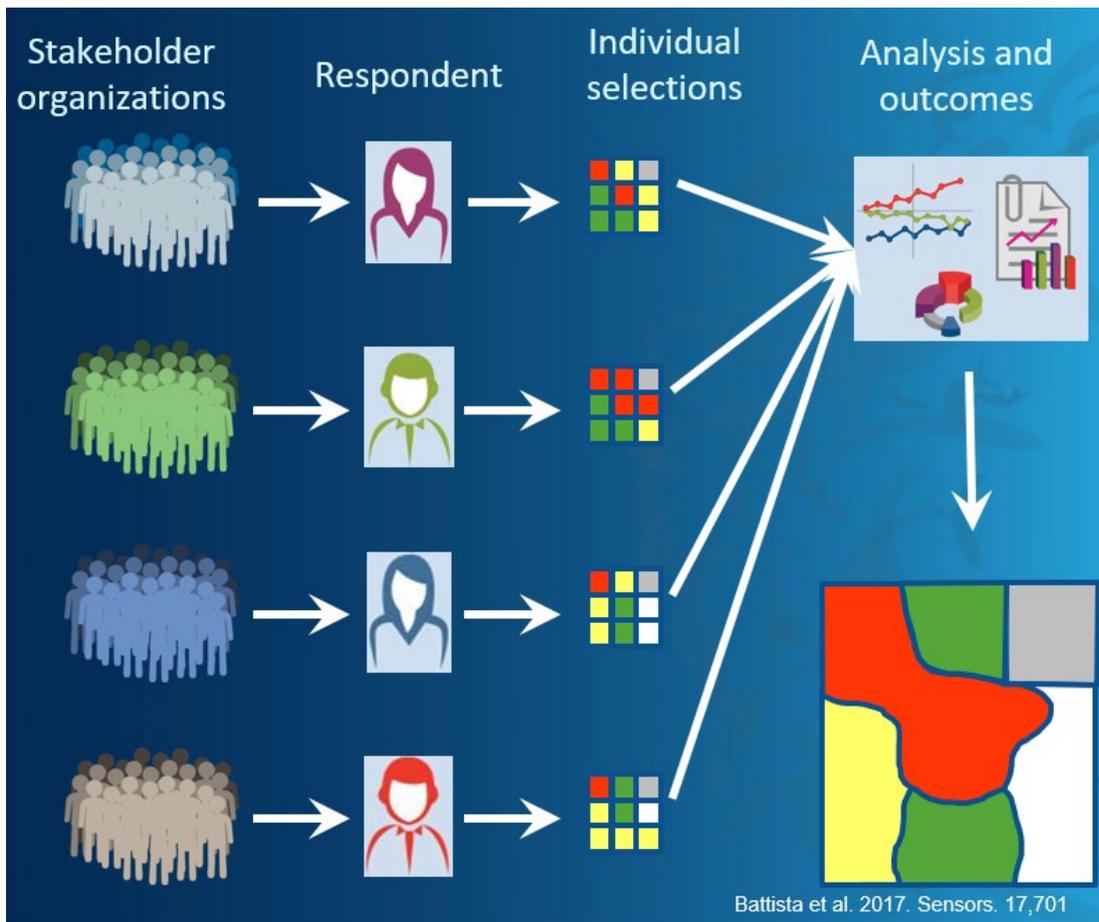
ID	Project Locations	Office	Rationale	Priority
15	Dixon Entrance	AFSC	Never charted.	H
16	GOA shelf	AFSC	Many commercially important fish and invertebrate species occur and are harvested in the Aleutian Islands. Little is known of the topography of high relief areas, and steep faces around the islands and along the slope of the GOA. Detailed bathymetry maps would be invaluable for bottom trawl surveys to determine trawlable and untrawlable grounds and eliminate know bias in fish survey biomass estimates. It would also provide a much greater understanding of fish and invertebrate habitats.	H
17	GOA slope	AFSC, AKRO	<u>AFSC</u> : Identify trawlable and untrawlable areas at depths > 300 m. Failure to do so produces biased estimates of fish abundance from bottom-trawl surveys and increases the uncertainty in stock assessments. The AFSC bottom-trawl survey needs improved bathymetry to produce better survey and stock assessment information for managed groundfish species. <u>AKRO</u> : Multibeam acoustic bathymetry/backscatter, sediment/substrate, and optical imagery data are needed for this area (e.g., 300-1,000 m depth) that is not well mapped to identify seafloor terrain (e.g., trawlable/untrawlable areas) to improve stock assessment abundance estimates from the bottom trawl and longline groundfish surveys, EFH maps, and identify deep water coral and sponge habitat in the US EEZ.	H, H
18	Icy Bay shelf	AFSC	Never charted.	H

ID	Project Locations	Office	Rationale	Priority
19	Gulf of Alaska	AFSC	If funding is available, MML will conduct a dedicated marine mammal survey in the Gulf of Alaska (PacMAPPS). Detailed bathymetric data would be useful to better understand marine mammal habitat, especially around Kodiak Is. (Barnabas Trough/Albatross Bank) and Shumagin Islands endangered North Pacific right whales has been visually and acoustically detected. This work might also provide an opportunity for an acoustician to join the survey to retrieve and redeploy acoustic recorders.	M
20	Portlock Bank	AFSC	Never charted.	H
21	SE Alaska, Inside Passage	AFSC, AKRO	<p><u>AFSC</u>: MML has conducted studies on beluga, killer whale, and porpoise species in Bristol Bay and near Kotzebue and Yakutat since 2009. There are navigation safety concerns due to outdated or sparse bathymetric data in these shallow water areas of high sediment dynamics. Detailed bathymetry will be used to determine acoustic mooring placements. In addition, knowing the substrate type will allow the characterization of acoustic propagation as well as marine mammal detection distances.</p> <p><u>AKRO</u>: Multibeam acoustic bathymetry/backscatter, sediment/substrate, and optical imagery data are needed for this area of southeast Alaska inside waters, which includes many gaps with respect to mapping spatial data needed to improve EFH maps for managed species life stages in state waters, stock assessment surveys (State of Alaska), and navigational safety.</p>	H, M
22	Shumagins	AFSC	Never charted.	H
23	Trinity Islands	AFSC	Never charted.	H

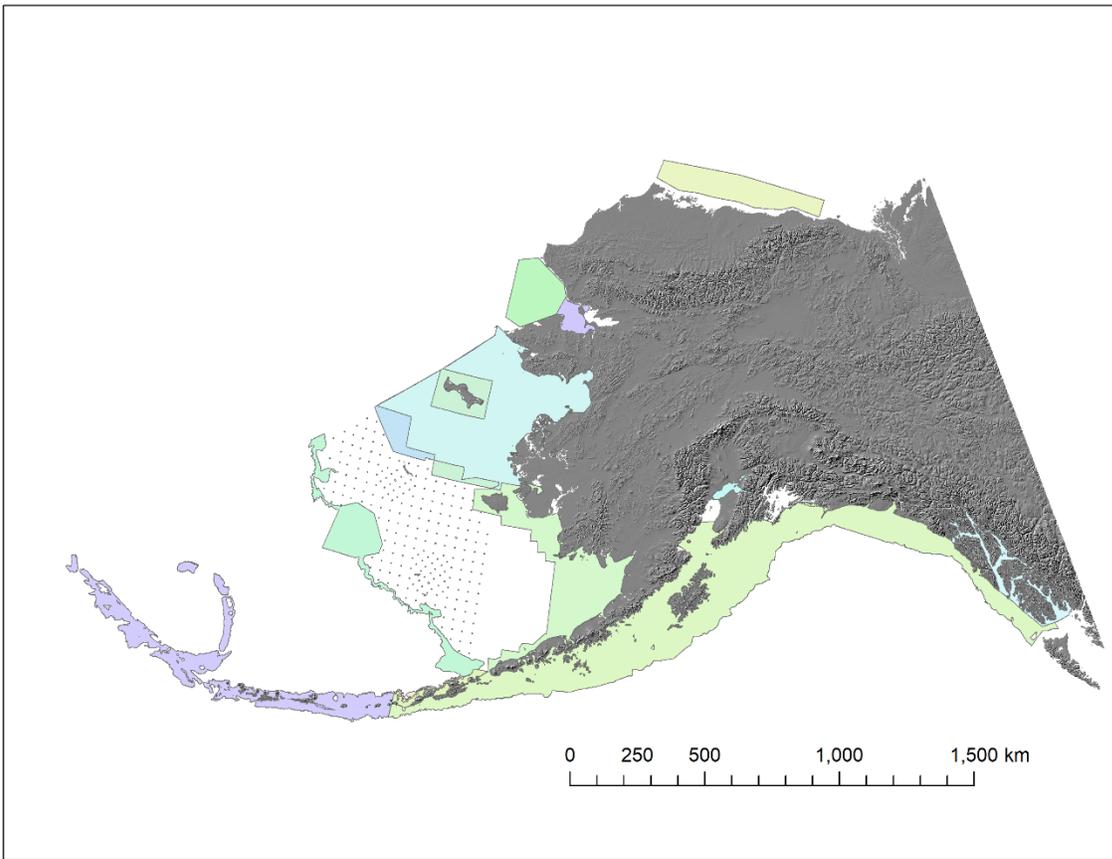
<b>ID</b>	<b>Project Locations</b>	<b>Office</b>	<b>Rationale</b>	<b>Priority</b>
24	Yakutat	AFSC	MML has conducted studies on beluga, killer whale, and porpoise species in Bristol Bay and near Kotzebue and Yakutat since 2009. There are navigation safety concerns due to outdated or sparse bathymetric data in these shallow water areas of high sediment dynamics. Detailed bathymetry will be used to determine acoustic mooring placements. In addition, knowing the substrate type will allow the characterization of acoustic propagation as well as marine mammal detection distances.	M
	Aleutian Islands			
25	AI shelf	AFSC	Many commercially important fish and invertebrate species occur and are harvested in the Aleutian Islands. Little is known of the topography of high relief areas, and steep faces around the islands. Detailed bathymetry maps would be invaluable for bottom trawl surveys to determine trawlable and untrawlable grounds and a much greater understanding of fish and invertebrate habitats.	H
26	AI slope	AKRO	Multibeam acoustic bathymetry/backscatter, sediment/substrate, and optical imagery data are needed for this area (e.g., 300-1,000 m depth) that is not well mapped to identify seafloor terrain (e.g., trawlable/untrawlable areas) to improve stock assessment abundance estimates from the bottom trawl and longline groundfish surveys, EFH maps, and identify deep water coral and sponge habitat in the US EEZ.	H
27	Amlia Island	AFSC	Never charted.	H
28	Atka Island	AFSC	Never charted.	H

**Table 2.** -- Final list of non-overlapping areas that was used to calculate allocations of sampling effort by management region. Composite areas are comprised of multiple overlapping projects. Survey cells were allocated accordingly to the 28 separate projects listed in Table 1, identified by the Project IDs. The notation (clip) indicates a recommended project spanned two regions and the effort for that project was allocated separately for each of the regions. An additional 4,501 grid cells are available for allocations to improve areal coverages, data quality, and mapping operations in the regions (450 H; 1,125 M; 2,251 L; and 675 N).

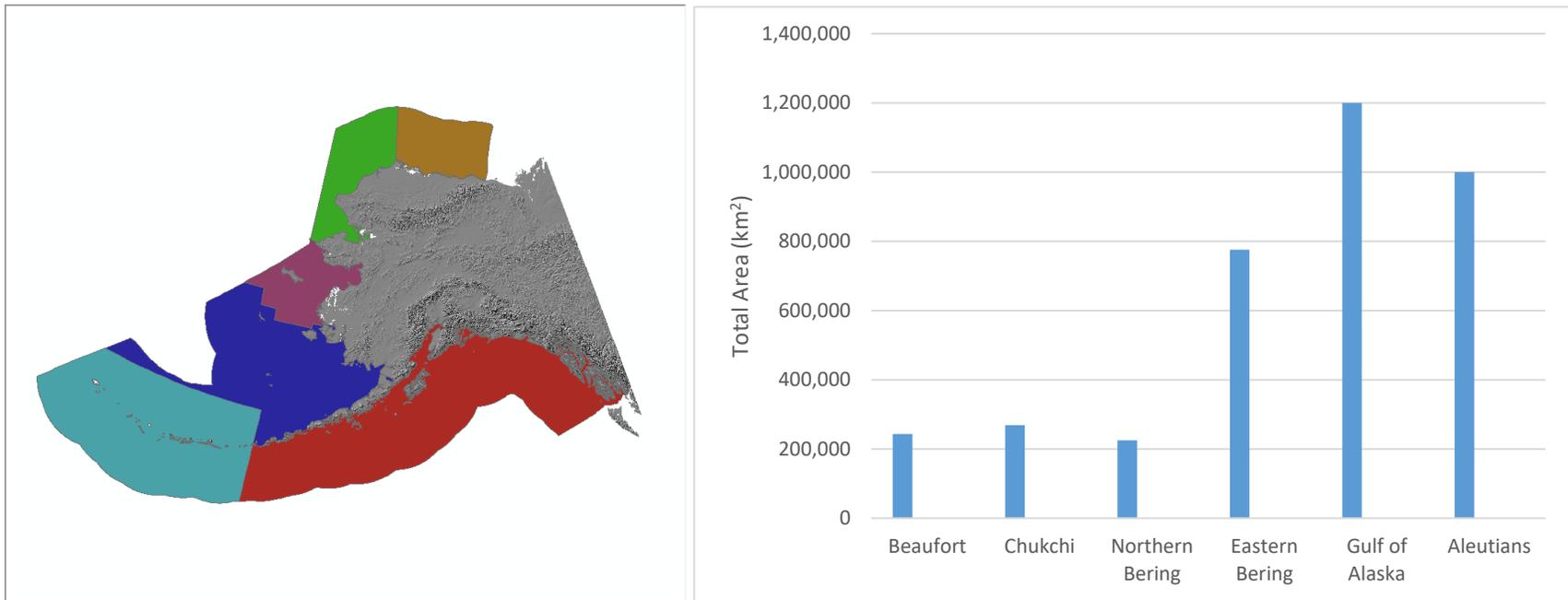
Region Project	Org.	Area km <sup>2</sup>	No. 100 km <sup>2</sup> cells	AK cells	Priority	Area-weighted grid-cell allocations					Project ID(s)
						H	M	L	<None>	Sum	
<b>Beaufort</b>		<b>243,144</b>	<b>2,431</b>	<b>5.8%</b>		<b>243</b>	<b>608</b>	<b>1,216</b>	<b>365</b>		
Prudhoe Bay offshore	AFSC	54,008	540	1.3%	H	243	297	0	0	540	1
(remainder)		189,137	1,891	4.5%	M	0	311	1,216	365	1,891	<none>
<b>Chukchi</b>		<b>268,728</b>	<b>2,687</b>	<b>6.5%</b>		<b>269</b>	<b>672</b>	<b>1,344</b>	<b>403</b>		
Kotzebue	AFSC	39,077	391	0.9%	H	269	122	0	0	391	2
Kotzebue_2	AFSC	10,305	103	0.2%	M	0	103	0	0	103	3
(remainder)	AFSC	219,347	2,193	5.3%	M	0	447	1,344	403	2,193	4
<b>Northern Bering Sea</b>		<b>224,942</b>	<b>2,249</b>	<b>5.4%</b>		<b>225</b>	<b>562</b>	<b>1,125</b>	<b>337</b>		
NBS composite	Both	195,124	1,951	4.7%	H(2)	225	426	963	337	1,951	5 (clip), 7 (clip)
(remainder)	Both	29,818	298	0.7%	M(2)	0	136	162	0	298	6
<b>Eastern Bering Sea</b>		<b>776,011</b>	<b>7,760</b>	<b>18.6%</b>		<b>776</b>	<b>1,940</b>	<b>3,880</b>	<b>1,164</b>		
EBS composite_1	Both	108,769	1,088	2.6%	H(2); M	268	820	0	0	1,088	7 (clip), 8; 9
AI shelf	AFSC	7,405	74	0.2%	H	74	0	0	0	74	25 (clip)
NBS Research Area	AFSC	16,650	167	0.4%	H	167	0	0	0	167	5 (clip)
EBS composite_2	AFSC	59,776	598	1.4%	H(2)	253	345	0	0	598	11, 12
EBS Shelf - west	AFSC	1,540	15	0.0%	H	15	0	0	0	15	10
AI slope	AKRO	3,389	34	0.1%	M	0	34	0	0	34	26 (clip)
(remainder)		578,482	5,785	13.9%		0	741	3,880	1,164	5,785	<none>
<b>Gulf of Alaska</b>		<b>1,199,958</b>	<b>12,000</b>	<b>28.8%</b>		<b>1,200</b>	<b>3,000</b>	<b>6,000</b>	<b>1,800</b>		
GOA composite	Both	329,006	3,290	7.9%	H(8); M(2)	848	2,442	0	0	3,290	14, 15, 16, 17, 18, 20, 22, 23; 19, 24
Cook Inlet	AFSC	3,770	38	0.1%	H	38	0	0	0	38	13
SE Alaska, Inside Passage	Both	31,445	314	0.0%	H/M	314	0	0	0	314	21
(remainder)		835,737	8,357	20.1%		0	558	6,000	1,800	8,357	<none>
<b>Aleutian Islands</b>		<b>1,000,111</b>	<b>10,001</b>	<b>24.0%</b>		<b>1,000</b>	<b>2,500</b>	<b>5,001</b>	<b>1,500</b>		
AI composite	AFSC	57,820	578	1.4%	H(3)	578	0	0	0	578	25 (clip), 27, 28
AI slope	AKRO	52,289	523	1.3%	H	422	101	0	0	523	26 (clip)
(remainder)		890,002	8,900	21.4%		0	2,399	5,001	1,500	8,900	<none>



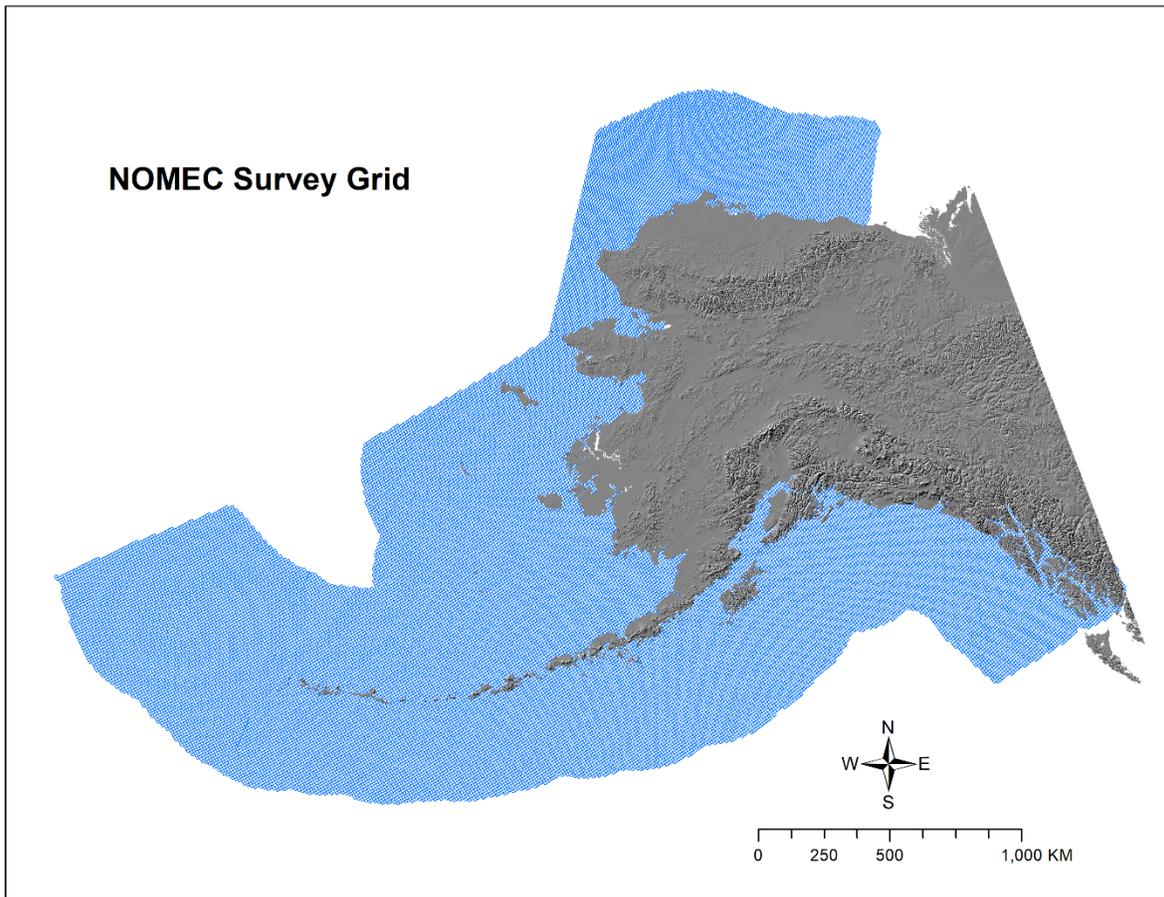
**Figure 1.** -- The process of gathering and synthesizing recommendations for ocean mapping priorities in the U.S. EEZ. Responses from multiple stakeholders are compiled and synthesized to guide coordinated mapping activities.



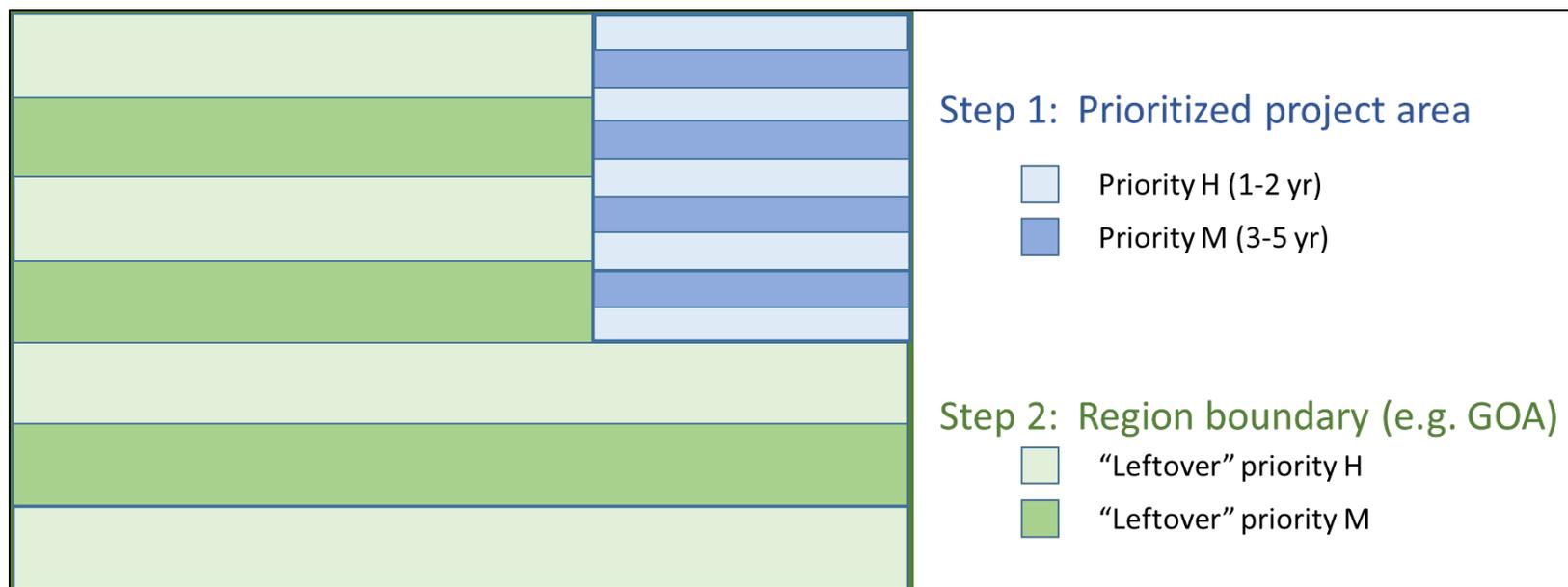
**Figure 2.** -- The 28 areas prioritized for mapping in the U.S. EEZ off Alaska. Overlapping spatial extents obscure some of the projects.



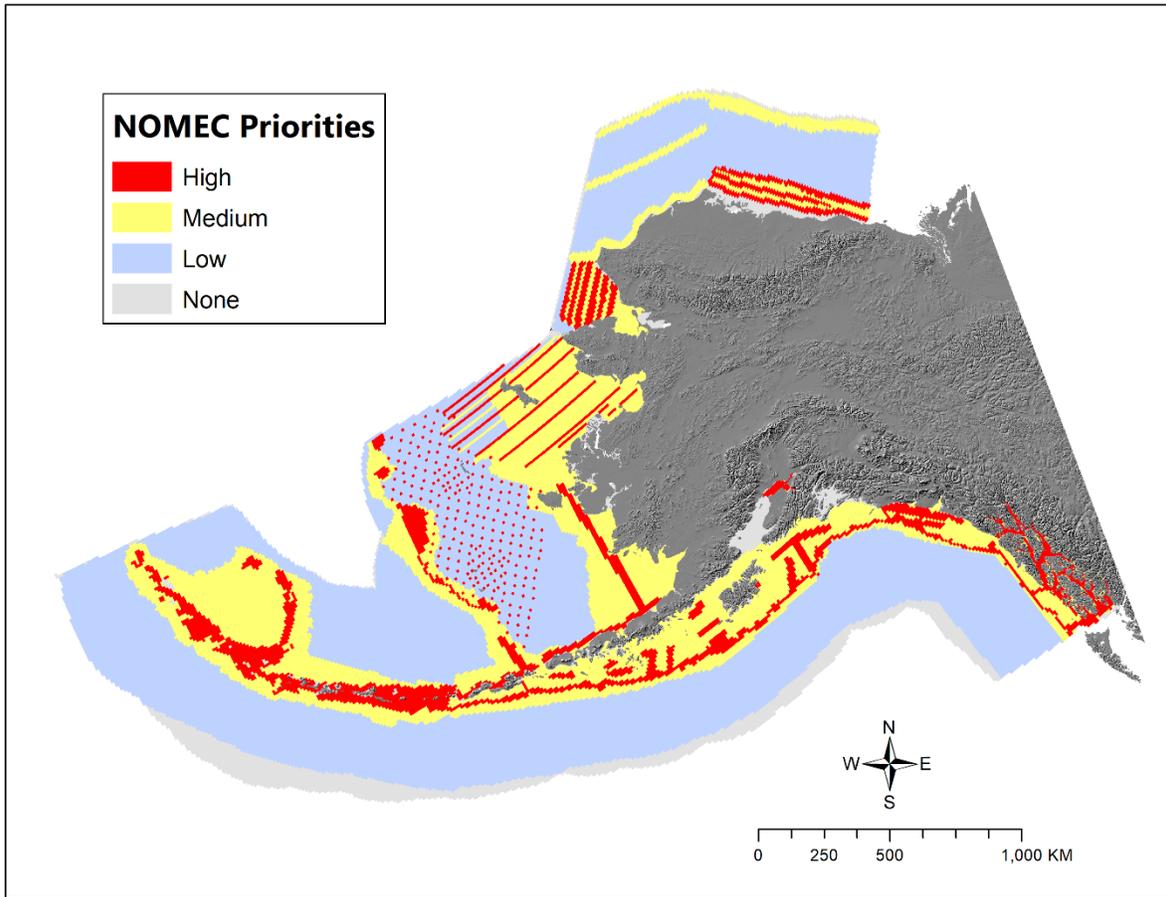
**Figure 3.** -- Six management regions used to allocate total mapping effort in the Alaska EEZ, according to the proportional area of each region, project specifications, and national guidelines that limit the total mapping effort that can be allocated to the different priority levels.



**Figure 4.** --The national survey grid for the Alaska EEZ. The grid extends from the offshore boundary to 20 km inland. There are a total of 41,630 cells, each measuring 10 x 10 km (100 km<sup>2</sup>).



**Figure 5.** -- Selection of survey grid cells for mapping was a two-stage process intended to prioritize recommended areas and provide immediately useful and steadily improving data quality over the life of the NOMECS program. Prioritized projects are mapped to the extent possible, followed by mapping with "leftover" effort in the surrounding region. In all cases, linear tracklines span the entire area in a manner that supports interpolation of survey data at the end of the first (H) time period, and improved interpolations at the end of subsequent time periods (M, L, N) as a result of increasing data density.



**Figure 6.** --Results of the NOMEC prioritization for the Alaska EEZ. Mapping locations and priorities were collaboratively assigned by scientists at the Alaska Fisheries Science Center and the Alaska Regional Office of NOAA, National Marine Fisheries Service.

## Appendices



**Appendix 1.** -- National survey criteria and definitions. This information serves as metadata to support recommendations to map specific areas in the U.S. EEZ.

<b>Priority</b>	
<b>Criterion</b>	<b>Details</b>
None	
Low	Mapping need in 6-10 years
Medium	Mapping need in 3-5 years
High	Mapping need in 1-2 years
<b>Justification - Purpose for Mapping</b>	
<b>Criterion</b>	<b>Details</b>
None	None
General knowledge gap	Default/general option; select if none of the other criteria meet your needs
Benthic exploration	Targeted benthic exploration for seafloor characterization
Water column exploration	Targeted water column exploration for water column characterization (e.g., upwelling, seeps, biological origin, biotoxins, harmful algae)
Commercial and recreational fishing	Fisheries management and regulation (e.g., commercial/recreational fishing locations, aquaculture siting, fisheries sampling stations, high bycatch areas, sport/charter fishing)
Cultural/historical resources	Shipwrecks, tribal use areas and other archaeological/cultural/historic resources
Energy	Energy permitting, siting, management, transmission (e.g., oil/natural gas platforms, deepwater ports, wind turbine, tidal/hydropower, cables, pipelines, etc.)
Habitat/biota/natural area	Includes Essential Fish Habitat, Critical Habitat (for marine mammals and other protected species), spawning/nursery areas, feeding grounds, key benthic habitats, habitat mapping, coastal geomorphology and other ecologically significant areas.
Coastal/marine natural hazards	Detection, forecast and management of coastal and marine hazards, including weather/storm surge, flooding, tsunamis, earthquakes, geologic faults, harmful algal blooms, etc.
Infrastructure (non-energy)	Existing or potential infrastructure development, includes port facilities, bridges, telecommunication cables, roads, etc.
Protection/Management Areas	Marine protected area, sanctuaries, conservation areas, restoration sites, dynamic management areas for marine mammals and other protected species
Monitoring	Monitoring of specific study areas for scientific or other purposes (such as coral health monitoring, invasive species monitoring, etc.)
Modeling	Modeling of specific study areas for scientific or other purposes

Navigation safety	Safe navigation in U.S. waters; e.g., shipping lanes, ferry routes, harbors/approaches, port facilities and marinas; includes detection of hazards to navigation (rocks, wrecks, other obstructions)
Scientific research	General scientific research, not including monitoring of a specific area
Mineral resources	Critical and base mineral resources, aggregate resources for beach renourishment and/or heavy sands mineral resource, other non-energy mineral resources
Sediment transport	Sediment movement and management needs, managing beach erosion/renourishment or sediment buildups in channels and ports
Maritime boundaries, maritime domain awareness and enforcement	Authoritative boundary management, DoD/DHS security operations, countermine measures, border patrols, law enforcement
Recreational activities (other than fishing)	Recreational activities (e.g., boating, ecotourism, swimming and diving)
Public health	Contaminants and hazards that could impact communities, subsistence cultures and food safety (e.g., seafood safety) such as contaminated sediments, marine biotoxins, chemicals around oil wells and pipelines, waste and dredge material dumping sites, etc.

## Map Product

Criterion	Details
None	None
Elevation (bathymetry/topography)	Measurement of height/depth of seabed or coastal terrain. Collected using multibeam sonar, airborne LiDAR or other methods. Processed into bathy grids, Digital Elevation Models for a wide variety of downstream products.
Backscatter intensity	Seabed imagery of reflected intensity (acoustic or optical) for location and distribution of different substrate types and habitat
Magnetometer surveys	For detection of magnetic anomalies, ferrous objects, man-made objects or evidence of human activity, cultural resource surveys, archaeological assessment, unexploded ordinance, wrecks, debris, etc.
Photographs/videos/imagery (surface or underwater)	Imagery of seabed/benthos/water column. Includes video and still imagery in all spectral bands. May be collected with ROVs, AUVs, other camera platforms, satellites, etc.
Biological, chemical or physical samples	Samples collected from seafloor/sub-seafloor/water column using divers, AUVs, ROVs, cores, grabs, CTDs, rosettes, etc.
Substrate/sub-bottom geologic characterization	Remote-sensing derived (i.e., seismic, chirp sub-bottom, multibeam sonar, sub-bottom profiling sonars, magnetic susceptibility, self-potential) seafloor type and characteristics (i.e., hardness/roughness/thickness/grain size/substrate type/mineralogy, etc.)

Water column mapping/characterization	Commonly collected with multibeam/split-beam sonar systems; used to identify bubbles, plankton layers, fish, harmful algae, biotoxins, seeps, etc.
Shoreline characterization/topographic maps	Delineation and characterization of shoreline/coastal topography/coastal infrastructure and features (port facilities, boat ramps, docks, pipe landfalls, etc.)
Habitat map/characterization	Identification/suitability of benthic environment and habitat distribution; derived from remote sensing, optical imaging, and physical sampling
Nautical map and chart products	Electronic Navigation Charts, other products for navigation
Human use statistics	Socioeconomic, demographic, and other statistics regarding human use of ocean areas
Wildlife population characterization	Includes marine mammal, bird, sea turtle surveys; stock assessments
Ocean use infrastructure site maps	Delineation and characterization of oil platforms, wells, pipelines, wastewater treatment plant outfalls, waste dredge material dump sites, shipping lanes, and aquaculture sites
Land use impacts on coastal zone	Location and metadata from wastewater treatment plant inputs and seepages, riverine runoff, stormwater runoff, and other impacts from manmade coastal zone inputs
Other mapping products not listed	

## Driver

### Criterion

None

Blue Economy

Coastal Zone Management Act

Endangered Species Act

Energy Policy Act of 2005

Executive Order 13817 (Reliable Supplies of Critical Minerals)

Executive Order 13840 (Ocean Policy to Advance Economic, Security, and Environment Interests)

Great Lakes Restoration Initiative

Magnuson–Stevens Fishery Conservation and Management Act

National Historic Preservation Act

National Marine Sanctuaries Act

National Park Service Organic Act

Oil Pollution Act

Outer Continental Shelf Lands Act

2019 Presidential Memorandum on Ocean Mapping (Mapping, Exploration, Characterization)

Public Law 89-560 (Soil Surveys Act)

Public Law 111-11 (Omnibus Public Land Management Act)

Public Law 1115-25 (Weather Research and Forecasting Innovation Act and Tsunami Warning, Education, and Research Act)

National Weather Service Organic Act
Marine Mammal Protection Act (MMPA)
Safety of Life at Sea Convention (Treaty)
Seabed 2030
Lakebed 2030
Great Lakes Water Quality Agreement
Great Lakes Council of Lakes Committees priorities
Coast and Geodetic Survey Act of 1947
Hydrographic Services Improvement Act
USGS Organic Act of 1879
Ocean and Coastal Mapping Integration Act
Ocean Exploration Act
Integrated Coastal and Ocean Observation System Act
Federal Food, Drug, and Cosmetic Act
National Shellfish Sanitation Program Model Ordinance
Other drivers not listed

## Horizontal Resolution

Criterion	Details
Not specified	Resolution not specified
< 100m	One pixel of data output must represent at most 100 x 100m of coverage
< 25m	One pixel of data output must represent at most 25 x 25m of coverage
< 10m	One pixel of data output must represent at most 10 x 10m of coverage
< 5m	One pixel of data output must represent at most 5 x 5m of coverage
< 1m	One pixel of data output must represent at most 1 x 1m of coverage

**Appendix 2.** -- Recommendations from AFSC scientists and associated metadata for areas requiring ocean mapping in the Alaska EEZ. Name of GIS layer identifies the mapping project in the GIS used to generate the NOMEK response for Alaska.

AFSC Ocean Mapping Prioritization Survey														
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY	JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Bob McConnaughey	AFSC/RACE	GOA upper slope	Identify trawlable and untrawlable areas at depths >300 m. Failure to do so produces biased estimates of abundance from bottom-trawl surveys and inaccurate stock assessments. The AFSC Bottom Trawl Survey needs improved bathymetry to produce better survey and stock assessment information for managed groundfish species.	High (mapping need in 1-2 years)	Commercial and recreational fishing	Habitat/biota/natural area	Modeling	Elevation (bathymetry/topography)	Backscatter intensity	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<25m	GOATS_300-1000.zip	GOATS_300to1k_bmc
Bob McConnaughey	AFSC/RACE	Northern Bering Sea Research Area	NBSRA is closed to trawling until potential impacts are known. Baseline information is needed to design a trawl-impact study.	High (mapping need in 1-2 years)	Commercial and recreational fishing	Protection/Management Areas	Habitat/biota/natural area	Backscatter intensity	Elevation (bathymetry/topography)	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	NBSRA.zip	NBSRA_nbs_bmc NBSRA_ebs_bmc
Bob McConnaughey	AFSC/RACE	EBS Shelf - West	Complete trackline-acoustic survey of EBS bottom-trawl-survey stations (western half). Eastern half surveyed in 2016. Comprehensive data are needed for basin-scale EFH, survey-trawl efficiency, and other applications.	High (mapping need in 1-2 years)	Commercial and recreational fishing	Habitat/biota/natural area	Modeling	Backscatter intensity	Elevation (bathymetry/topography)	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<10m	EBS_west.zip	EBSwest_bmc
Jennifer Ferdinand	AFSC/FMA							< No recommendations >						

AFSC Ocean Mapping Prioritization Survey														
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY	JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
John Bengtson	AFSC/MML	Marine mammal distribution	MML doesn't have specific areas for which to request mapping of physical oceanic features. However, if survey vessels could assist in annual servicing of acoustic sensors currently deployed on selected fixed oceanic moorings in the Bering and Chukchi seas that would be very helpful to ongoing efforts to map marine mammal seasonal distribution.	Medium (mapping need in 2-5 years)	Protection/ Management Areas	Habitat/biota/ natural area	Scientific research	Wildlife population characterization	None	None	Endangered Species Act	Not specified		
John Bengtson	AFSC/MML	Coastal and nearshore imagery of marine mammal habitats	Gaining access to coastal and nearshore aerial imagery that may be produced by manned or unmanned aerial surveys in Alaskan waters (e.g., Gulf of Alaska, Aleutian Islands, Bering, Chukchi, and Beaufort seas) would be very helpful in assessing the spatial use of terrestrial sites by pinnipeds. (i.e., seals, sea lions, and fur seals). Specific areas on an extensive spatial scale could be identified and prioritized if this type of request is relevant to potential NOMECS surveys (none now).	Medium (mapping need in 2-5 years)	Protection/ Management Areas	Habitat/biota/ natural area	Scientific research	Wildlife population characterization	None	None	Endangered Species Act	Not specified		
Sean Rooney	AFSC/RACE	Pacific cod essential fish habitat	Pacific cod are commercially and ecologically important. Understanding their distribution and use of nearshore nursery habitats remains limited. The proposed work would fill in gaps of existing bathymetry, conducted in 2004 + 2017, at the site of an ongoing study (since 2006). Comprehensive data are needed for regional-scale EFH work on residency and connectivity of juvenile and adult Pacific cod.	High (mapping need in 1-2 years)	Commercial and recreational fishing	Scientific research	Navigation safety	Elevation (bathymetry/ topography)	Backscatter intensity	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	Cook_Bay.zip	Cook_Bay_sr

AFSC Ocean Mapping Prioritization Survey														
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY	JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Mark Zimmermann	AFSC/RACE	Amlia	Never charted, hazardous for bottom trawl survey	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research	Navigation safety	Elevation (bathymetry/topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	Amlia_Island.zip	AmliaIsl_mz
Mark Zimmermann	AFSC/RACE	Atka	Never charted, hazardous for bottom trawl survey	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research	Navigation safety	Elevation (bathymetry/topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	Atka_Island.zip	AtkaIsl_mz
Mark Zimmermann	AFSC/RACE	Beaufort	Never charted	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research		Elevation (bathymetry/topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	Beaufort.zip	Beaufort_mz
Mark Zimmermann	AFSC/RACE	Dixon Entrance	Never charted	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research		Elevation (bathymetry/topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	Dixon_Entrance.zip	DixonEnt_mz
Mark Zimmermann	AFSC/RACE	Icy Bay Shelf	Never charted	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research		Elevation (bathymetry/topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	Icy_Bay_Shelf.zip	IcyBay_Shelf_mz
Mark Zimmermann	AFSC/RACE	Kotzebue	Never charted	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research		Elevation (bathymetry/topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	Kotzebue.zip	Kotzebue_mz
Mark Zimmermann	AFSC/RACE	Portlock Bank	Never charted	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research		Elevation (bathymetry/topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson-Stevens Fishery Conservation and Management Act	<5m	Portlock_Bank.zip	Portlock_Bank_mz

AFSC Ocean Mapping Prioritization Survey														
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY	JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Mark Zimmermann	AFSC/RACE	Shumagins	Never charted	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research		Elevation (bathymetry/ topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson–Stevens Fishery Conservation and Management Act	<5m	Shumagins.zip	Shumagins_mz
Mark Zimmermann	AFSC/RACE	Trinity Islands	Never charted	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research		Elevation (bathymetry/ topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson–Stevens Fishery Conservation and Management Act	<5m	Trinities.zip	Trinities_mz
Mark Zimmermann	AFSC/RACE	Zhemchug Canyon	Never charted	High (mapping need in 1-2 years)	Protection/ Management Areas	Scientific research		Elevation (bathymetry/ topography)	Habitat map/ characterization	Nautical map and chart products	Magnuson–Stevens Fishery Conservation and Management Act	<5m	Zhemchug.zip	Zhemchug_mz
Dana Hanselman	AFSC/ABL	Chukchi Sea	Commercially important groundfish are increasingly being found in the Chukchi and Beaufort Seas in the Arctic, the Arctic FMP currently prohibits fishing but more baseline data about the habitat and bathymetry are needed as this area opens up to vessel traffic and potentially fishing.	Medium (mapping need in 2-5 years)	General knowledge gap	Commercial and recreational fishing	Scientific research	Elevation (bathymetry/ topography)	Substrate/sub-bottom geologic characterization	Nautical map and chart products	Magnuson–Stevens Fishery Conservation and Management Act	<5m	ArcticMarineEcosystem.zip	ArcticME_dh_cut
Gerald Hoff	AFSC/RACE	Eastern Bering Sea Upper Continental Slope	Many commercially important fish and invertebrate species occur and are harvested along the Upper continental slope of the Eastern Bering Sea. Little is known of the topography of high relief areas such as canyons and steep faces along the slope. Detailed bathymetry maps would be invaluable for bottom trawl surveys to determine trawlable and untrawlable grounds and a much greater understanding of fish and invertebrate habitats.	High (mapping need in 1-2 years)	Protection/ Management Areas	Commercial and recreational fishing	Scientific research	Elevation (bathymetry/ topography)	Substrate/sub-bottom geologic characterization	Nautical map and chart products	Magnuson–Stevens Fishery Conservation and Management Act	<5m	EBS slope shape.zip	EBSslope_jh

AFSC Ocean Mapping Prioritization Survey														
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY	JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Gerald Hoff	AFSC/RACE	Aleutian Islands	Many commercially important fish and invertebrate species occur and are harvested in the Aleutian Islands. Little is known of the topography of high relief areas, and steep faces around the islands. Detailed bathymetry maps would be invaluable for bottom trawl surveys to determine trawlable and untrawlable grounds and a much greater understanding of fish and invertebrate habitats.	High (mapping need in 1-2 years)	Protection/ Management Areas	Commercial and recreational fishing	Scientific research	Elevation (bathymetry/topography)	Substrate/sub-bottom geologic characterization	Nautical map and chart products	Magnuson–Stevens Fishery Conservation and Management Act	<5m	Aleutian Island shapes.zip	AI_jh ebs_jh
Gerald Hoff	AFSC/RACE	GOA shelf	Many commercially important fish and invertebrate species occur and are harvested in the Aleutian Islands. Little is known of the topography of high relief areas, and steep faces around the islands and along the slope of the GOA. Detailed bathymetry maps would be invaluable for bottom trawl surveys to determine trawlable and untrawlable grounds and a much greater understanding of fish and invertebrate habitats.	High (mapping need in 1-2 years)	Protection/ Management Areas	Commercial and recreational fishing	Scientific research	Elevation (bathymetry/topography)	Substrate/sub-bottom geologic characterization	Nautical map and chart products	Magnuson–Stevens Fishery Conservation and Management Act	<5m	GOA shape.zip	GOA_jh
Cynthia Yeung	AFSC/RACE	Northern Bering Sea entirety	Vulnerable marine ecosystem, potential commercial groundfish habitat, subsistence and protected/endangered species	Medium (mapping need in 2-5 years)	Protection/ Management Areas	Scientific research	Habitat/biota/natural area	Elevation (bathymetry/topography)	Substrate/sub-bottom geologic characterization	Habitat map/ characterization	Magnuson–Stevens Fishery Conservation and Management Act	<10m	North_strata_NBS_shape.7z	NBStrata_cy

AFSC Ocean Mapping Prioritization Survey														
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY	JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Kim Goetz	AFSC/MML	Pacific Marine Assessment Program for Protected Species in Gulf of Alaska	If funding is available, MML will conduct a dedicated marine mammal survey in the Gulf of Alaska. Detailed bathymetric data would be useful to better understand marine mammal habitat, especially around Kodiak Is (Barnabas Trough/Albatross Bank) and Shumagin Islands endangered North Pacific right whales has been visually and acoustically detected. This work might also provide an opportunity for an acoustician to join the survey to retrieve and redeploy acoustic recorders.	Medium (mapping need in 2-5 years)	Scientific research	Habitat/biota/natural area	General knowledge gap	Elevation (bathymetry/topography)	Substrate/sub-bottom geologic characterization	Backscatter intensity		<10m	PacMAPPS_coastal.zip	PacMAPPS_kg
Kim Goetz	AFSC/MML	Harbor porpoise research in southeast Alaska	In 2019, MML conducted a dedicated research cruise to estimate the abundance of harbor porpoise in southeast Alaska. During this survey which has occurred since the early 90s, there are safety concerns due to outdated navigation charts and inaccurate bathymetric data. New bathymetric maps would be invaluable for operating in the narrow passageways of SE Alaska. In addition, these data can be used in habitat mapping for humpback whales, Dall's and harbor porpoise.	High (mapping need in 1-2 years)	Navigation safety	Scientific research	Habitat/biota/natural area	Elevation (bathymetry/topography)	Nautical map and chart products	Substrate/sub-bottom geologic characterization		<5m	SEAK_hp.zip	seak_hp_kg

AFSC Ocean Mapping Prioritization Survey														
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY	JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Kim Goetz	AFSC/MML	Marine mammal research in a shallow bay near Yakutat, Alaska	MML has conducted studies on beluga, killer whale, and porpoise species in Bristol Bay and near Kotzebue and Yakutat since 2009. There are navigation safety concerns due to outdated or sparse bathymetric data in these shallow water areas of high sediment dynamics. Detailed bathymetry will be used to determine acoustic mooring placements. In addition, knowing the substrate type will allow the characterization of acoustic propagation as well as marine mammal detection distances.	Medium (mapping need in 2-5 years)	Navigation safety	Scientific research	Habitat/biota/natural area	Elevation (bathymetry/topography)	Nautical map and chart products	Substrate/sub-bottom geologic characterization		<5m	Yak.zip	YakutatMML_kg
Kim Goetz	AFSC/MML	Marine mammal research in a shallow bay near Kotzebue, Alaska	MML has conducted studies on beluga, killer whale, and porpoise species in Bristol Bay and near Kotzebue and Yakutat since 2009. There are navigation safety concerns due to outdated or sparse bathymetric data in these shallow water areas of high sediment dynamics. Detailed bathymetry will be used to determine acoustic mooring placements. In addition, knowing the substrate type will allow the characterization of acoustic propagation as well as marine mammal detection distances.	Medium (mapping need in 2-5 years)	Navigation safety	Scientific research	Habitat/biota/natural area	Elevation (bathymetry/topography)	Nautical map and chart products	Substrate/sub-bottom geologic characterization		<5m	Kotz.zip	KotzMML_kg

AFSC Ocean Mapping Prioritization Survey														
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY	JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Kim Goetz	AFSC/MML	Marine mammal research in Bristol Bay, Alaska	MML has conducted studies on beluga, killer whale, and porpoise species in Bristol Bay and near Kotzebue and Yakutat since 2009. There are navigation safety concerns due to outdated or sparse bathymetric data in these shallow water areas of high sediment dynamics. Detailed bathymetry will be used to determine acoustic mooring placements. In addition, knowing the substrate type will allow the characterization of acoustic propagation as well as marine mammal detection distances.	Medium (mapping need in 2-5 years)	Navigation safety	Scientific research	Habitat/biota/natural area	Elevation (bathymetry/topography)	Nautical map and chart products	Substrate/sub-bottom geologic characterization		<5m	Bristol.zip	BristolMML_kg
Kim Goetz	AFSC/MML	Habitat use of beluga whales in Cook Inlet, Alaska	Despite being listed as endangered in 2008, Cook Inlet belugas continue to decline. Since 2016, we have been conducting boat-based operations to further assess body condition, abundance, and distribution. However, exposed mudflats, narrow channels and outdated bathymetric charts make navigation in upper Cook Inlet challenging and often dangerous. In addition to aiding navigation in upper Cook Inlet, high res depth data will help us understand how these animals are using their environment.	High (mapping need in 1-2 years)	Navigation safety	Scientific research	Habitat/biota/natural area	Elevation (bathymetry/topography)	Nautical map and chart products	Substrate/sub-bottom geologic characterization		<5m	UCI_beluga.zip	CookBeluga_kg

**Appendix 3.** -- Recommendations from AKRO scientists and associated metadata for areas requiring ocean mapping in the U.S. EEZ off Alaska.  
 Name of GIS layer identifies the mapping project in the GIS used to generate the NOMECS response for Alaska.

AKRO Ocean Mapping Prioritization Survey																
Respondent	Affiliation	Project Name	Project Rationale	PRIORITY			JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Response	AKRO Review	AKRO % Allocation	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Jodi Pirtle	AKRO/HCD	Gulf of Alaska outer continental shelf and upper slope mapping	Multibeam acoustic bathymetry/backscatter, sediment/substrate, and optical imagery data are needed for this area (e.g., 300-1000 m depth) that is not well mapped to identify seafloor terrain (e.g., trawlable/untrawlable areas) to improve stock assessment abundance estimates from the bottom trawl and longline groundfish surveys, EFH maps, and identify deep water coral and sponge habitat in the US EEZ.	High (mapping need in 1-2 years)	High (mapping need in 1-2 years)	25	Commercial and recreational fishing	Habitat/biota/natural area	Benthic exploration	Elevation (bathymetry/topography)	Backscatter intensity	Photographs/videos/imagery (surface or underwater)	Magnuson–Stevens Fishery Conservation and Management Act	Not specified	GOA_300-1000m_jp.shp	GOA3001000m_jp
Jodi Pirtle	AKRO/HCD	Aleutian Islands outer continental shelf and upper slope mapping	Multibeam acoustic bathymetry/backscatter, sediment/substrate, and optical imagery data are needed for this area (e.g., 300-1000 m depth) that is not well mapped to identify seafloor terrain (e.g., trawlable/untrawlable areas) to improve stock assessment abundance estimates from the bottom trawl and longline groundfish surveys, EFH maps, and identify deep water coral and sponge habitat in the US EEZ.	High (mapping need in 1-2 years)	High (mapping need in 1-2 years)	25	Commercial and recreational fishing	Habitat/biota/natural area	Benthic exploration	Elevation (bathymetry/topography)	Backscatter intensity	Photographs/videos/imagery (surface or underwater)	Magnuson–Stevens Fishery Conservation and Management Act	Not specified	AI_300-1000m_jp.shp	AI_300-1000m_jp

AKRO Ocean Mapping Prioritization Survey

Respondent	Affiliation	Project Name	Project Rationale	PRIORITY			JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	AKRO Review	AKRO % Allocation	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Jodi Pirtle	AKRO/HCD	Gulf of Alaska continental shelf and upper slope sediment/substrate collection and mapping	A dbSEABED dataset (sediment/substrate) was developed by USGS (doi.org/10.5066/F7CV4FT9), yet is not comprehensive to the GOA management area and should be completed, including through the W GOA with new data collected to fill gaps in the C and E GOA. Coverage from shore to 1000 m depth. Needed to improve trawlable/untrawlable awareness for the RACE GAP survey and EFH maps.	Medium (mapping need in 2-5 years)	Medium (mapping need in 2-5 years)		Commercial and recreational fishing	Habitat/biota/natural area	Benthic exploration	Biological, chemical or physical samples	Substrate/sub-bottom geologic characterization		Magnuson–Stevens Fishery Conservation and Management Act	Not specified	GOA_ZimmRO MSBathy_NoSE AK_jp.shp	(withdrawn)
Doug Limpinsel and Jodi Pirtle	AKRO/HCD	Bristol Bay Nearshore Juvenile Groundfish Habitat	Bristol Bay nearshore habitats are nurseries for commercially important groundfishes and crabs. Comprehensive sediment/substrate, other environmental attributes, and juvenile fish data will establish nursery habitat linkages with offshore productivity in the EBS fisheries (EFH Level 4). These survey data are required to first develop maps of juvenile fish habitat-related density (EFH Level 2) and vital rates (EFH Level 3). This information is critical to understand impacts of e.g., mining on fish habitat and consequences to EBS fishery productivity.	High (mapping need in 1-2 years)	High (mapping need in 1-2 years)	25	Habitat/biota/natural area	Commercial and recreational fishing	Public health	Substrate/sub-bottom geologic characterization	Biological, chemical or physical samples	Habitat map/characterization	Magnuson–Stevens Fishery Conservation and Management Act	<25m	BristolBay_Inside162.jp.shp	BristolBay_Inside162.jp

AKRO Ocean Mapping Prioritization Survey

Respondent	Affiliation	Project Name	Project Rationale	PRIORITY			JUSTIFICATIONS			MAP PRODUCTS			Policy Driver (optional)	Horizontal Resolution (optional)	Name of GIS Shp File (Polygon)	Name of GIS layer
				Responder	AKRO Review	AKRO % Allocation	Primary Justification (required)	Justification-2 (optional)	Justification-3 (optional)	Primary Map Product (required)	Map Product-2 (optional)	Map Product-3 (optional)				
Jodi Pirtle	AKRO/HCD	Bering Sea inner continental shelf mapping	Bering Sea continental shelf inside of the RACE GAP survey areas is not well mapped with respect to bathymetry, sediment/substrate, and other environmental attributes. This information is needed to develop quality EFH maps for groundfish juvenile life stages in this area that is likely extensive nursery habitat (e.g., flatfish). Quality EFH information for habitat-related density, vital rates, and productivity are needed to link nursery habitat productivity to offshore populations in the groundfish fisheries.	High (mapping need in 1-2 years)	High (mapping need in 1-2 years)	25	Habitat/biota/natural area	Commercial and recreational fishing	Cultural/historical resources	Elevation (bathymetry/topography)	Backscatter intensity	Biological, chemical or physical samples	Magnuson–Stevens Fishery Conservation and Management Act	Not specified	EastBeringSea_Inside_RACEGAPSurvey_jp.shp	Inside_RACESurvey_ebs_jp Inside_RACESurvey_nbs_jp
Jodi Pirtle	AKRO/HCD	Northern Bering Sea Research Area	Multibeam acoustic bathymetry/backscatter. Needed as baseline information to design a trawl-impact study. Needed for EFH mapping.	Medium (mapping need in 2-5 years)	Medium (mapping need in 2-5 years)	50	Habitat/biota/natural area	Commercial and recreational fishing	Navigation safety	Elevation (bathymetry/topography)	Backscatter intensity	Biological, chemical or physical samples	Magnuson–Stevens Fishery Conservation and Management Act	Not specified	NBS_jp.shp	NBS_jp
Jodi Pirtle	AKRO/HCD	Southeast Alaska inside waters mapping	Multibeam acoustic bathymetry/backscatter, sediment/substrate, and optical imagery data are needed for this area of southeast Alaska inside waters, which includes many gaps with respect to mapping spatial data needed to improve EFH maps for managed species life stages in state waters, stock assessment surveys (State of Alaska), and navigational safety.	Medium (mapping need in 2-5 years)	Medium (mapping need in 2-5 years)	50	Habitat/biota/natural area	Navigation safety	Commercial and recreational fishing	Elevation (bathymetry/topography)	Backscatter intensity	Biological, chemical or physical samples	2019 Presidential Memorandum on Ocean Mapping (Mapping, Exploration, Characterization)	Not specified	SEAK_inside_jp.shp	SEAK_inside_jp



U.S. Secretary of Commerce  
Wilbur L. Ross, Jr.

Acting Under Secretary of Commerce  
for Oceans and Atmosphere  
Dr. Neil Jacobs

Assistant Administrator for Fisheries  
Chris Oliver

August 2020

[www.fisheries.noaa.gov](http://www.fisheries.noaa.gov)

OFFICIAL BUSINESS

National Marine  
Fisheries Service  
Alaska Fisheries Science Center  
7600 Sand Point Way N.E.  
Seattle, WA 98115-6349